

including physiotherapy, occupational therapy and psychomotricity was marked by an improvement of sensitivity, good recovery of balance allowing walking with a simple cane.

**Discussion.**— The methods of rehabilitation for proprioceptive ataxia have been reported rarely. We describe in this work exteroceptive and proprioceptive sensory stimulation exercises, the work of static balance, the work of dynamic balance, the work of prehension and the interest of lower limb orthoses.

**Conclusion.**— Rehabilitation of thalamic ataxia requires a multisensorial approach, after which each patient will determine personal sensory preferences that depend on personal achievements and level of disability.

doi:10.1016/j.rehab.2011.07.069

CO39-002-EN

### Effects of a constraint-induced therapy on gait biomechanics parameters in hemiparetic patients after overground or treadmill training

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**Keywords:** Stroke; Gait; Motion analysis; Constraint induced therapy; Rehabilitation

Gait training following stroke is recognized as effective but independently of the technique used. Studies suggest that constraint of the healthy lower limb could constitute an interesting technique to improve gait of the hemiplegic patients. The objective of this randomized controlled study is to determine the specific contribution of a constraint through a weight worn by the healthy lower limb during a session of walking training overground and on a treadmill in hemiplegic patients.

**Patients and method.**— Forty-eight stroke patients able to walk without technical assistance for 20 min participated in this study. Patients were evaluated by 3D analysis quantifying the spatial and temporal parameters, kinematics and kinetics before gait training, immediately before and after 20 min of rest.

**Results.**— The results of the gait analysis show that the weight had no specific effect on the spatiotemporal parameters, joint kinematics or kinetics of the hemiplegic side while there was a significant effect of training condition (overground or treadmill). The propulsion of the hemiplegic side was specifically increased after training on the treadmill. Training overground increased symmetry of the single support phase.

**Discussion.**— A change in balance management differently overground and on a treadmill, can explain these results. The biomechanical changes persist for at least 20 min after training and may reflect an adaptation of the CNS. These results are interesting from a clinical point of view because these two elements are major objectives of gait rehabilitation in these patients; physiotherapists can propose a specific training for these patients.

**Further reading**

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doi:10.1016/j.rehab.2011.07.070

### Motor under-utilization scale assessing the impact of unilateral spatial neglect on postural functional abilities in hemiparetic individuals

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**Keywords:** Physiotherapy; ESUM; Hemiplegia; Unilateral neglect; Sit-to-stand task; Risk of falling

**Background.**— Compensation for their motor disability requires attention from the hemiparetic individuals (Vincent et al., 2009). But, in some hemiparetic subjects, attention disorders such as unilateral neglect disturb rehabilitation and increase the risk of falling (Heilman et al., 1993). However, there is no scale in physiotherapy which assesses the consequences of unilateral neglect on the functional ability to stand up from the sitting position.

**Purpose.**— Create a motor scale (ESUM) assessing the gap between the postural functional abilities of the hemiparetic individual and his/her real motor activity (real spontaneous motility, risk of falling. . .). The goal of this scale is to evaluate specifically the under utilization of motor abilities created by unilateral neglect. This new scale is compared with standardized motor scales already known such as the Postural Assessment Scale for Stroke Patients (PASS) and the Berg balance scale.

**Patients and methods.**— Twenty hemiparetic brain-injured subjects, unable to walk alone are tested on two motor standardized motor scales (PASS and Berg) and on our motor under utilization scale (ESUM). In practice, the scale assesses the sit-to-stand task. The evaluator assessed:

- where the patient puts his feet;
- if the patient checks where he puts his feet by sight;
- if there is a support reaction in the hemiparetic lower limb or not (Bobath, 1973).

The obtained results from the three scales were correlated with the results obtained at the GEREN scale assessing unilateral neglect (BEN).

**Results.**— This new scale (ESUM) was reliable and rapid to administer (two minutes). It enabled evaluation of motor under-utilization of functional abilities in hemiparetic individuals with unilateral neglect. The preliminary results showed a correlation between the quality of the sit-to-stand task (ESUM) and the unilateral neglect (BEN). These results tend to prove the good sensitivity of the task and confirm the need to evaluate more patients.

doi:10.1016/j.rehab.2011.07.071

CO39-004-EN

### Effects of massage of the neck on undisturbed upright stance control in humans

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**Keywords:** Neck; Balance; Physiotherapy; Massage

**Introduction.**— The purpose of this study was to evaluate the effects of a session of massage of the neck on balance performance in young and in elderly people.

**Methods.**—Ten young subjects ( $18.8 \pm 1.8$  years, mean  $\pm$  SD) and 18 old subjects ( $74.1 \pm 7.2$  years) were recruited from community. Subjects stood barefoot on a force platform and were asked to sway as little as possible. The task was executed in four experimental sessions: before, just after (post0), after 2 minutes (post2) and after 4 minutes (post4) a twenty-minute massage of the neck realized by physiotherapist. Centre of feet pressure (COP) displacements were recorded using a force platform.

**Results.**—Results demonstrated a significant improvement after massage for both groups. For elderly subjects, length of CP displacement was reduced significantly at post0 and post2, but not at post4. For young subjects, post0, post2 and post4 showed an improvement of CP control.

**Discussion.**—These results emphasize the positive impact of a single session of massage applied to the neck on balance in young and in elderly subjects. They also reflect the role of cervical spine in control of balance while standing.

doi:10.1016/j.rehab.2011.07.072

CO39-005–EN

### Randomised controlled single-blind trial comparing two rehabilitation programs in Parkinson's disease at a moderate stage: Methodology

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**Keywords:** Parkinson's disease; Asymmetric motor training; Physiotherapy; Randomised controlled single-blind trial

**Introduction.**—Parkinson's disease (PD) is a highly prevalent disorder past 65 years of age, causing major motor deficiencies. Physical treatment is underused compared to chemical and surgical therapies. The present study compared immediate and late symptomatic changes after two different rehabilitation programs.

**Methods.**—Fifty patients with mild to moderate PD (Hoehn and Yahr 2 to 3) are participating in 3 weekly 1-hour home rehabilitation sessions for 8 weeks. Patients have been randomised into 2 groups regarding the type of rehabilitation. Group 1: "Asymmetric motor training" program, designed to enhance only the agonist activity of the "body openers", i.e. extension/supination/abduction/external rotation — which is more reduced than their antagonist activity of flexion/pronation/adduction/internal rotation in PD — aiming at rebalancing forces around joints;

Group 2: "Broad" program, with standard techniques of passive and active joint mobilisations, balance and gait training, relaxation techniques and respiratory work.

Assessment is performed in the clinically defined OFF status (over 12 hours after the last levodopa intake). This includes UPDRS-III, GMT score (standing up from a supine position on the floor), rapid alternating movements, hand-writing and spiralography (coefficient of symmetry), quality of life (PDQ-39), depression (GDS-15), video recording of 8 activities of daily living and biomechanical evaluations (gait parameters, extensor motor strength, spine posture and balance). UPDRS-III is also being assessed 1 hour after levodopa intake. These evaluations are performed before the rehabilitation period, at the end of the 8 weeks of rehabilitation and 3 months later.

**Conclusions.**—If the asymmetric motor training proves superior to the standard rehabilitation program, this will bring about controlled evidence for the future prescription of rehabilitation techniques in PD. However, whichever program proves more efficient, it is hypothesized that the present study will provide quantifications of symptomatic improvement, the magnitude of which may help renew interest for rehabilitation in PD, particularly in the early stages.

**Further reading**

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### Acknowledgements

Assistance Publique des Hôpitaux de Paris; Association Neurorééducation en Mouvement.

doi:10.1016/j.rehab.2011.07.073

CO39-006–EN

### New "closed chain" techniques for rehabilitation of rotator cuff injuries

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**Keywords:** Cuff; Shoulder; Physiotherapy; Rehabilitation

**Objective.**—Evaluation of a manoeuvre to refocus glenohumeral active closed-chain and on an innovative machine.

**Systems/Patients and methods.**—The manoeuvre was assessed with 2 sets of measurements. On 56 shoulders: mobility gain in flexion and in abduction in the plane of the scapula and during the C-test. Then on 42 other shoulders: gain in abduction in the frontal plane.

The thoraco-humeral angle was measured before and after the manoeuvre for the first and the second series.

The therapist held the hand of the patient, raised his arm in the extension of the spine of the scapula. The other hand was on the shoulder to refocus and the fingers were on the infraspinous fossa in order to achieve the palpation of muscle contraction, while the thumb was on the humerus, checking humeral lowering. The subject drew on the hand 3 seconds with outstretched elbow, 2–3 times in less than a minute.

Muscle strengthening training: on a prototype machine: 18 shoulders pushing and pulling in the same position: the Constant score was calculated before and after rehabilitation.

**Results.**—**Manoeuvre** (in less than one minute): on 56 shoulder, flexion is increased by  $11.4^\circ$ , C-test by  $9.7^\circ$  and physiological abduction by  $19.6^\circ$ . On 42 shoulders, abduction in the frontal plane is increased by  $15.1^\circ$ .

**Rehabilitation:** In 20 sessions on the machine the rehabilitation is improved. The weighted Constant score increased from 63% to 96%.

**Discussion.**—In this situation, cuff, long biceps and triceps create centripetal forces balance. The glenoid-humerus angle is greater than  $90^\circ$ . The compression in the humeral axis slides back down the humeral head until it presses on the glenoid depression located under the glenoid tubercle. The "adductor muscles" create a compression and an automatic medial rotation which, combined with sliding down, correct the medial rotation spin. The conflict is reduced.

The active work in repeated tension and pressure on the machine helps strengthen and sustain the results.

**Conclusion.**—The manoeuvre complements or replaces the manual correction of offsets.

The machine allows recentering, proprioceptive and muscle re-education. The conflict is reduced and Constant score is improved.

doi:10.1016/j.rehab.2011.07.074

CO39-007–EN

### A new heterogeneous scale to assess shoulder disorders: The Standardised Functional Index of Shoulder (FI2S). Reliability, validity and responsiveness to change

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**Keywords:** Shoulder; Assessment; Constant-Murley score